

Transfer of *Kaempferia siphonantha* Baker to *Boesenbergia* Kuntze (Zingiberaceae)

M. Sabu, M. G. Prasanthkumar, J. Skornickova and S. Jayasree

Department of Botany, University of Calicut 673 635, Kerala, India.

Abstract

Kaempferia siphonantha Baker described from the Andaman Islands more than a century ago on critical studies proved to be a *Boesenbergia* and hence a new combination, *B. siphonantha* (Baker) M. Sabu, Prasanthkumar et Skornickova, is proposed. A detailed description based on new collections is provided with analytical sketches and key to the species of *Boesenbergia* in the Island. The view that the genus *Curcumorpha* A. S. Rao & D. M. Verma is synonymous to *Boesenbergia* is supported.

Keywords: Andaman Islands, *Kaempferia siphonantha*, Transfer, *Boesenbergia siphonantha*

Introduction

Baker (1890) described *Kaempferia siphonantha* based on specimens brought by King's collector in 1884 from the Andamans. Ninety years later, Bhargava collected this species from the inland evergreen forests. Taxonomic accounts of Zingiberaceae for Andaman & Nicobar Islands did include this species but did not contain any comments on its status (Balakrishnan & Nair, 1980; Bhargava & Nair, 1981; Balakrishnan & Bhargava, 1984; Rao, 1986). Srivastava (1998) summed up Zingiberaceae for the islands enumerating 23 species in 10 genera, both wild and naturalized.

The authors, while exploring the Islands during April-May 2002 for the revision of Indian Zingiberaceae, collected this species from the forests of Baratang and Mayabunder of Middle Andaman. Live collections grown at the Botanic Garden of Calicut University flowered in September 2002 and June 2003. A critical study in comparison with the type at CAL proved that species in fact belonged to the genus *Boesenbergia* and the species came very near to *B. longiflora* (Wall.) O. Kuntze. Hence, a new combination is proposed.

***Boesenbergia siphonantha* (Baker) M. Sabu, Prasanthkumar et Skornickova, comb. nov.**

Kaempferia siphonantha Baker in Hook.f., Fl. Brit. Ind. 6:222.1890; K. Schum. in Engl. Pflanzenr., 4(46):84. 1904; Karthikeyan et al., Fl. Ind. Enum. Monocot.

297.1989; Srivastava in Higher Pl. Ind. Subcont. 8:23.1998.

Figs 1, 2.

Type: Andamans, 1884, King's Collector 372 (CAL).

Perennial rhizomatous herbs; rhizome subterranean, globular, 1.2-1.5 cm in diameter, creamy yellow inside, faintly aromatic; roots fleshy, 2.5-3 cm long; root tubers 5-6 in number, obovoid, 1 x 0.8 cm, white. *Plants* 20-30 cm high, pseudostem 5-6 cm long, uniformly green. *Leaves* 4-7 in number; petiole 3-6 cm long, grooved, ligulate, ligule 1 mm long, bilobed, hyaline; lamina oblong lanceolate, 10-15 x 4-7 cm, base cordate, oblique, tip acuminate, upper surface green, glabrous, lower surface green or light purple, glabrous, margin wavy, light purple when young. *Inflorescence* both central and lateral; peduncle 2.5-3 cm long, narrow, slender, branched, spikes 4-5 on one peduncle; spike cylindrical, 4-6 cm long, 4-8 flowered, one or two flowers opening at a time in a basipetal succession; bracts 4-8 in number, distichous, linear, 4-5 x 1.1 cm, pale green, each bract subtending a single flower; bracteole one in each bract, linear, 2.2-2.9 x 1.1 cm, 3-toothed, hyaline. *Flower* 10.5-12 cm long, erect, exerted; calyx hyaline, shallowly 3-toothed, 0.7 cm long; corolla tube cylindrical, 8.6-9 cm, white, lobes unequal, spreading, glabrous, oblong-lanceolate, tip rounded; dorsal lobe 1.2-1.3 x 0.4-0.5 cm; lateral lobe 1.3 x 0.4 cm; lateral staminodes broad, obovate, 0.8 x 0.3-0.6 cm, closely appressed with the

labellum towards the base; labellum 2×0.5 -1.7 cm, saccate, margin wavy, crumpled, distal half violet with reddish bands towards centre; stamen short, filament 0.1-0.15 cm long, white; thecae 5 mm long;

ovary 5-6 mm long, white, trilobular with many ovules on axile placenta; epigynous glands two, 0.45 cm long, creamy white, slender, linear with pointed apex. *Fruits not seen.*

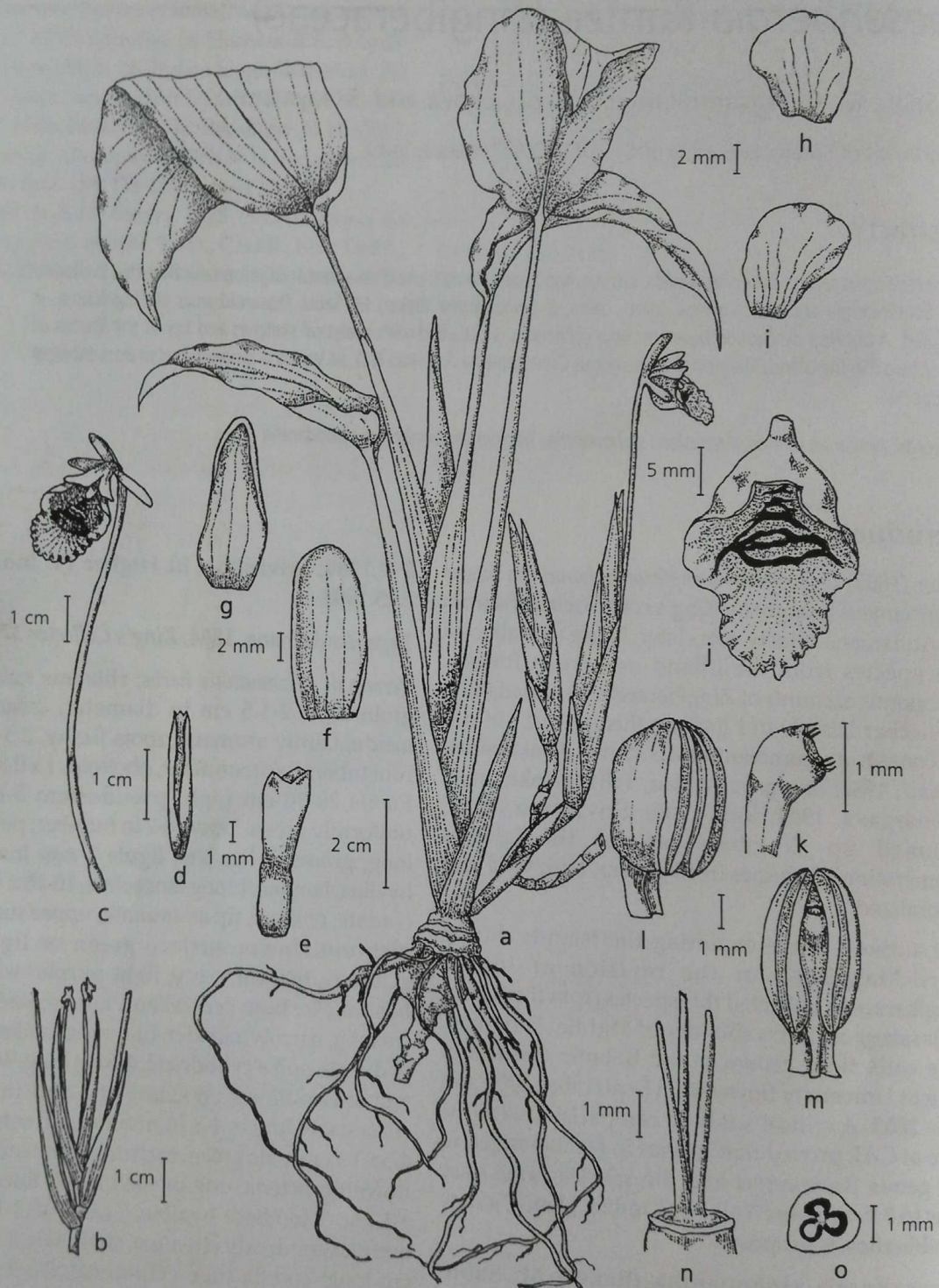


Figure 1. *Boesenbergia siphonantha* (Baker) M. Sabu et al. - a. Habit; b. Spike - bracts spread out; c. Single flower; d. Bracteole; e. Calyx tube with ovary; f. Dorsal corolla lobe; g. Lateral corolla lobe; h, i. Lateral staminodes; j. Labellum; k. Stigma; l. Anther - lateral view; m. Anther - front view; n. Epigynous glands; o. Ovary C. S. (all: Sabu & Prasanthkumar 86340)



Figure 2. *Boesenbergia siphonantha* (Baker) M. Sabu et al. – a. Plant; b. Inflorescence; c. Flower.

Flowering: June- September.

Habitat: Growing as a small herb in moist deciduous and inland evergreen forests, more profusely on humus rich forest floor.

Altitude: 5-45 m.

Occurrence: South, Middle and Little Andamans.

Distribution: Endemic.

Uses: Rhizome is used against diarrhoea and abdominal disorder (Srivastava, 1998).

Specimens Examined: INDIA, **Andaman & Nicobar Islands**, South Andaman, Baratang, South Creek, Karmalabasthi, 10 May 2002 (flowered in September 2002 and June 2003 at Botanical Garden, Calicut University), Sabu & Prasanthkumar 86340 (CALI); Kencheri Road, 14 July 1977, Bhargava 5890 (PBL); Middle Andaman, Mayabunder, Chainpur, 12 May 2002 (flowered on 17 June 2003 at Botanical Garden, Calicut University) Prasanthkumar & Skornickova 73311 (CALI); Betapur, inland evergreen forest, 23 February 1974, Bhargava 1850 (PBL); Tugapur Road, 31 July 1974 Bhargava 1942 (PBL); Little Andaman, Water fall near forest nursery, 14 August 1976, Bhargava 4121 (PBL).

Note: This species differs from the closely related *Boesenbergia longiflora* (Wall.) O. Kuntze from Meghalaya as under:

species. Holttum (1950) remarked that *B. longiflora* did not belong to *Boesenbergia* but not having studied live collections, he did not effect any transfer. This cue was taken up by Rao and Verma (1971) who erected a new genus *Curcumorpha* for *Boesenbergia longiflora* and characterized it by the spurious stem, radical spike, spiral bracts, staminodal cup formed by the fusion between filaments, base of the lateral staminodes and the labellum.

Since then the status of *Curcumorpha* had been in dispute. Das and Sikdar (1982) felt it appropriate to treat the species under *Boesenbergia*. Larsen (1997) was also of the opinion that the characters identified for *Curcumorpha* were not strong enough to propose a distinct genus. His studies on specimens from India, Myanmar and Thailand led him to conclude that many characters found highly variable in *Curcumorpha* could be attributed to *Boesenbergia*. He reduced the former with the latter.

Kress *et al.* (2002) in their new phylogenetic classification of Zingiberaceae based on molecular data, however, tentatively treated *Curcumorpha* as a distinct genus. They suggested, "*Boesenbergia* itself may be polyphyletic with one group of species (here represented by *B. pulcherrima*) allied to *Curcumorpha*". They further opined, "this taxonomic complex is yet another example of the problems that exists in defining clear generic boundaries in Zingiberaceae".

Boesenbergia longiflora	B. siphonantha
Leafy shoot 45-50 cm high; leaves usually 4-5 in a tuft.	Leafy shoot 20-30 cm high; leaves usually 5-7 in a tuft.
Lamina oblong-lanceolate, 12-50 x 11-12 cm, cordate or cuneate at base, glabrous; margin straight, green when young	Lamina oblong-lanceolate, 10-15 x 4-7 cm, cordate at base, oblique, tip acuminate, glabrous; margin wavy, light purple when young.
Petiole 10-12 cm long, channelled.	Petiole 3-6 cm long, grooved.
Spike 10-12 cm long.	Spike 4-6 cm long.
Bracteoles elliptic, two in each bract, 5 x 0.5-0.8 cm, creamy, glabrous	Bracteole one in each bract, linear, 2.2-2.9 x 1.1 cm, 3-toothed, hyaline, glabrous.
Labellum 3.5-4 x 3 cm, saccate, creamy white to the periphery, purple to reddish brown towards centre.	Labellum 2 x 0.5-1.7 cm, saccate, margin wavy, crumpled, white, distal half violet with reddish bands towards centre.

Wallich (1830) described the genus *Gastrochilus* and the species *G. longiflorus* in Zingiberaceae based on a collection from the Himalayas. Unfortunately this genus was a later homonym of the generic name proposed by D. Don (1825) in Orchidaceae. Otto Kuntze (1891) who detected this proposed *Boesenbergia* for Wallich's genus and transferred the

Present studies on live plants from Andaman & Nicobar Islands and Northeastern India indicate that the generic boundaries of *Curcumorpha* and *Boesenbergia* overlapped very much. We, therefore, preferred to follow the view expressed by Larsen (*l.c.*) in keeping this taxon under *Boesenbergia*.

The genus *Boesenbergia* in Andaman & Nicobar Islands has now three species which can be separated using the following keys.

- 1a. Leaves 2 per plant, variegated, not tufted **B. albolutea**
- 1b. Leaves 4-7 per plant, not variegated, tufted **2**
- 2a. Spike central, included, peduncle not branched; flowers usually not exerted beyond leaf sheath, labellum white with reddish brown tinge **B. rotunda**
- 2b. Spike both central and lateral, peduncle branched; flowers exerted beyond bracts and leaf sheaths, labellum white with distal half violet having reddish bands towards centre **B. siphonantha**

B. albolutea and *B. rotunda* are included in the Andaman Flora on the authority of earlier workers (Das & Sikdar, 1982; Srivastava, 1998).

Acknowledgements

The research grant provided by the Department of Science & Technology, Government of India for a revision of Indian Zingiberaceae is gratefully acknowledged. We are also grateful to Prof. (Dr) Kai Larsen, Aarhus University, Denmark for his valuable opinion on the identity of the species. Thanks are also due to the officers of Forest Department, Andaman & Nicobar Islands for permission and timely help in the field. We are thankful to Dr P. V. Sreekumar, Officer-in-Charge, Botanical Survey of India, Port Blair and other staff of the circle for their assistance during our visit. Various help rendered by Dr A. K. Pradeep, Curator, Calicut University Herbarium (CALI) during the exploration is also gratefully acknowledged.

Literature Cited

- Baker, J. G. 1890. *Kaempferia*. In: Hooker, J. D., *Flora of British India*. L. Reeve & Co, London 6: 218-224.
- Balakrishnan, N. P. & N. Bhargava 1984. The genus *Curcuma* in Andaman & Nicobar Islands. *J. Bombay Nat. Hist. Soc.* 81: 510-514.
- Balakrishnan, N. P. & N. G. Nair 1980. The genus *Amomum* Roxb. (Zingiberaceae) in Andaman & Nicobar Islands. *J. Bombay Nat. Hist. Soc.* 76(1): 196-199.
- Bhargava, N. & N. G. Nair 1981. Notes on *Zingiber squarrosus* Roxb. - a poorly known Burmese species new to the Indian flora. *Bull. Bot. Surv. India* 21(4): 175-177.
- Das, C. R. & J. K. Sikdar 1982. Review of the genus *Boesenbergia* (Scitamineae) from India. *Bull. Bot. Soc. Bengal* 36:39-46.
- Don, D. 1825. *Prodromus Florae Nepalensis*. London.
- Holttum, R. E. 1950. The Zingiberaceae of the Malay Peninsula. *Gard. Bull. Singapore* 13(1): 1-249.
- Kress, W. J., Prince, L. M. & K. J. Williams 2002. The phylogeny and new classification of the gingers (Zingiberaceae): evidence from molecular data. *Amer. J. Bot.* 89(11):1682-1696.
- Kuntze, O. 1891. *Revisio Genera Plantarum* 3. Dulare & Co., London.
- Larsen, K. 1997. Further studies in the genus *Boesenbergia* (Zingiberaceae). *Nord. J. Bot.* 17(4): 361-366.
- Rao, A. S. & D. M. Verma 1971. *Curcumorpha*: a new genus of Zingiberaceae. *Bull. Bot. Surv. India* 13: 339-341.
- Rao, M. K. V. 1986. A preliminary report on the Angiosperms of Andaman & Nicobar Islands. *J. Econ. Tax. Bot.* 8(1): 167-184.
- Srivastava, S. K. 1998. Zingiberaceae in Andaman & Nicobar Islands, India. *Higher Pl. Indian Subcontinent* 8: 1-33.
- Wallich, N. 1830. *Plantae Asiaticae Rariores*. London.

Received 2.1.2004

Revised and accepted 20.10.2004